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A Consideration of some Diseases of Animals—The Laboratory and Field Worker.*

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The following are some of the points included in the investigation of animal diseases—a general study of the disease as it occurs naturally in the field; a detailed study of naturally-occurring cases, preferably in the field (under certain circumstances it may be necessary to carry out this study on animals transported to a laboratory, especially if the course of the disease is prolonged); a detailed macroscopic and microscopic consideration of affected tissues, including bacteriological and similar types of examinations in an attempt to name the cause. The investigation from this point may vary considerably, depending largely on the findings. As the ultimate object of research into disease is the establishment of prophylaxis and curative treatment, it naturally follows that if definite bacteriological or similar evidence is forthcoming as to etiology, attempts will be made to evolve biological products which can ultimately be used in the field. The efficacy of such products must first be established in the laboratory on laboratory experimental animals if such are susceptible, then on small numbers of the animals naturally attacked, and finally one or more extensive field trails must take place in which an adequate number of untreated animals is exposed to the natural disease under exactly similar conditions to those treated. The issue from such an experiment would decide whether the product evolved could be adopted for general use in all parts of the country. If, during the course of the investigation, the cause of the disease is shown definitely to be non-parasitic in character, the above does not apply and a further study of preventive and curative methods must be undertaken. The following remarks apply to diseases of a parasitic nature.

The laboratory and the field worker play equally important parts in investigations. To a large extent the veterinary practitioner is the field worker, and we cannot emphasise too strongly the part he can, and often does, play, and the very great help he can be to the laboratory worker. The further we study disease problems the more we must agree that in cases where the veterinary practitioner plays his part well, the earlier can results be got and the more reliable are the results of tests carried out. There are times when the laboratory worker must become his own field worker, for till very recently veterinary practitioners apparently took little interest in the diseases of some animals, *e.g.*, poultry, sheep, pigs, etc., but every year sees a larger number taking up the treatment of diseases of such animals and becoming of real value in further investigations.

The early and the final stage of investigations should be mainly in the hands of the field worker. Granted that the naming of the cause and pathological changes and the preparation of products for field use must be the work of the laboratory worker entirely, the field worker's share covers practically everything else, from the diagnosing of cases, the ensuring of a constant supply of investigation material, the obtaining of facilities to carry out field experiments and trials in biological products, to the final testing of preventive and curative measures on an extensive scale.

During the last three years of investigation into diseases of animals, we have tried under practically every condition to have a veterinary practitioner to play the part of the field worker. In a few cases this was impossible, either owing to the non-existence of a practitioner in the district in which the disease under study largely existed, or to the practitioner having little interest in the condition. This refers mostly to poultry investigations, yet we look forward to the very near future when poultry diseases will be included in the daily routine of the practitioner, a position in the creating of which recent and future research will, we believe, play a big part.

The diseases we wish to consider are *Blackleg in Cattle*, *Leptospiral Jaundice in Dogs* and *Bacillary White Diarrhœa in Poultry*, because they illustrate some of the points already mentioned, and some of the work affords examples of the results of collaboration between the laboratory and the field worker. It is mostly with the etiology and treatment that we propose to deal.

BLACKLEG IN CATTLE.

From 1887, when Roux investigated blackleg in cattle, till very recently, *B. chauvoei* was generally regarded as the sole cause of the disease. Even to-day there are some who incline to this view and hold that any other organisms that may be isolated from lesions of blackleg are either extraneous contaminators or are organisms which have caused a pathological condition very similar to blackleg, but still not true blackleg. The organism, other than *B. chauvoei* most commonly associated with blackleg lesions is *Vibrion septique*, which formerly was said to cause malignant œdema. Weinberg (1) in an article published lately, produces a table illustrating the findings of thirteen groups of Continental workers who examined material from 487 cases of blackleg. In 223 cases *Vibrion septique* was isolated, sometimes alone and sometimes in association with *B. chauvoei*. Workers in this country have not had such an experience, though *Vibrion septique* has been isolated in our laboratory quite recently from a case of blackleg; the organism was not associated with *B. chauvoei*. Bearing in mind the facts that outbreaks of blackleg, no matter what is the infecting organism, arise from wound infection with the organism which may be harboured in the soil, that the anærobic group of organisms has some members pathogenic for cattle, as seen by experimental inoculation, and that *Vibrion septique* is highly pathogenic to cattle, is more or less ubiquitous in nature and when inoculated experimentally produces lesions indistinguishable from those produced by *B. chauvoei*, it seems fairly certain that under natural conditions *Vibrion septique* will invade the animal body *via* wounds and produce clinical blackleg. The evidence in this country of *Vibrion septique* infection in clinical blackleg is not yet complete. We feel that many more outbreaks should be studied in this country to establish once and for all if organisms, other than *B. chauvoei*, may produce natural clinical blackleg. The ease with which contaminant organisms may be included in samples of muscle taken for such examinations must be borne in mind, both by the field and the laboratory worker, as well as the difficulty experienced in growing, isolating and identifying *B. chauvoei* compared with some of the other pathogenic anærobes, and the possibility therefore that it may be missed in contaminated material and a false position of importance allotted to the contaminants.

Because of the belief that *Vibrion septique* may play a not unimportant part in the causation of blackleg, some recent vaccines to protect against this organism and *B. chauvoei* have been made in this country and on the Continent. We have shown on several occasions that a *Vibrion septique* toxin-antitoxin mixture can be made, which, after two injections, will produce a high degree of immunity in guinea-pigs and in sheep; a dose of toxin or

*Presented at the Annual Meeting of the North Wales Division, Bangor, February 25th, 1927.

culture lethal to unprotected animals is tolerated with ease by those protected by the mixture. It has also been shown that a moderate degree of immunity results after one injection of such a mixture. Further, it has been shown by many, including ourselves, that complete immunity may be found in guinea-pigs and sheep following a single dose of *B. chauvoei* filtrate. Equal parts of *Vibrion septique* toxin-antitoxin mixture and *B. chauvoei* filtrate are used to make the vaccine referred to. Field trials of this vaccine have been satisfactory, but all field workers who have carried out the tests are not in favour of two doses being given, because of the expense incurred in the inoculations. At the present time there is no evidence to show that any preparation made by using *Vibrion septique* will, after one injection, produce a high degree of immunity in the field, though McEwan (2) has recorded results of some work on the subject which show promise that such a product may be evolved. One dose of *B. chauvoei* filtrate, however, will completely immunise. If it is desirable to use the double vaccine and only one dose can be administered, complete protection against *B. chauvoei*, and some protection against *Vibrion septique*, will result. Some protection is better than none at all; hence, even though only one dose may be injected, it would appear that the double vaccine is indicated in the light of our present day knowledge.

For the treatment of cattle affected with blackleg, doubtless every practitioner has his own pet remedy. It may be of interest to know that some practitioners rely on the injection of anti-*B. chauvoei* serum. Such a serum can be produced and some laboratories issue a serum which, when tested in the laboratory, has the power to check infection by *B. chauvoei*.

Lately it was necessary, for some laboratory work, to use an anti-*B. chauvoei* serum and we made some in a cow by injecting *B. chauvoei* filtrate.

(Table I shows that the serum was a true anti-bacterial *B. chauvoei* serum).

TABLE I.

Blackleg Serum—Made in Cow.

Guinea-pigs received serum two days before culture.

Serum.	Culture.	Result.
5 c.c.	0·2 c.c.	L.
2·5 c.c.	0·2 c.c.	L.
1·0 c.c.	0·2 c.c.	L.
1·0 c.c.	0·1 c.c.	L.
Normal Cow Serum	0·1 c.c.	D.
No serum	0·1 c.c.	D.
	0·1 c.c.	D.

L = Lived. D = Died.

High grade *Vibrion septique* antitoxin can also be produced.

CANINE LEPTOSPIRAL JAUNDICE.

Okell, Dalling and Pugh (3) intimated that cases of canine leptospiral jaundice had been studied and *Leptospira icterohæmorrhagica* isolated. We believe this parasite to be the cause of outbreaks of canine jaundice or "yellows"—a disease which occurs as an enzootic in many kennels. It must be pointed out here that the name canine leptospiral jaundice or "yellows" does not include sporadic cases of jaundice which the practitioner frequently sees in dogs, but refers to that highly-fatal infectious disease during the course of which many or all of the dogs in a kennel may be affected. The disease has been reported to us from all over England and Scotland and is most commonly found affecting young dogs in sporting kennels.

The parasite is found normally in the kidneys of male wild rats, and would appear to be harboured there without interfering with the general health of the animal. It is voided in the urine and may thus soil and contaminate food, litter, etc. to which the rats have access. Houston (4) has demonstrated the presence of leptospira in well water on many occasions, and in some cases it would appear that rats could not have had access to the water. Okell has been able, working with water samples from the same wells, to show that one sample contained leptospira which were pathogenic for tame rats and guinea-pigs. Many leptospiræ were seen in the other samples, but on experiment they proved non-virulent. Buchanan (5) working on slime obtained from parts of coal mines in Scotland was able to demonstrate living, virulent leptospiræ which were believed to have caused cases of Weil's Disease in some miners working in the mines. The slime was in such a position that rats could not have had access to it. It would appear, then, that though rats are the important vectors of the disease in this country, other sources do exist, though possibly in the case of dog infections they are of little consequence.

It is a very simple process to infect dogs with virulent parasites in the laboratory. Whereas our original method was to inject a suspension of mashed up guinea-pig liver or cultures intraperitoneally, we have shown that infection can be brought about by feeding the organism in the food and by scratching the dog's skin and laying infected material on the scratched area. In all our recent infection experiments we have used the scratch method with complete success. We can, therefore, now definitely state that dogs can be infected by picking up infected material in food or water and through skin abrasions on any part of the body, including the pads of the feet.

Treatment of leptospiral jaundice is more successful from a prophylactic than a curative aspect. Serum and vaccine have been prepared and have been shown to be effective.

Serum is made in horses by repeated injections of killed or attenuated organisms. In the laboratory it has been shown to protect guinea-pigs and dogs when administered before, at the same time as, or following the living parasites. In practice its value as a curative agent is very problematical because of the rare occasions on which it can be injected early in the course of the disease. Experiments already reported show that icteric symptoms develop about 4—5 days after infection has taken place, and that when gross infection is present, serum can do little to save the animal's life after jaundice is established. Its value is its ability to produce a passive immunity of about three weeks' duration, and therefore its chief use is in preventing the spread of the disease in an infected kennel. Inoculations done on all the dogs in a kennel in which one or more cases have been diagnosed will prevent their infection and allow time for the removal of the infecting agent. We have much proof on this point. Although we have shown experimentally that the appearance of icterus in the very severe infections produced in laboratory work marks the end of the usefulness of the serum, many veterinary surgeons have had good results from its use, even at this stage of the disease. The results reported to us vary, but there is some chance that in the field, even in dogs showing marked icterus, recovery may occur after injection of serum.

Vaccine treatment has given good results in the laboratory and in the field. Its use should be confined to dogs in kennels in which periodic outbreaks of jaundice occur, and in which no actual cases have occurred for some time prior to its use. During the period immediately following injection the dog may be more susceptible to the action of the parasite, hence care should be taken that no cases of the disease are present at the time of vaccine injection. Our former experiments have been carried out with vaccine made from guinea-pig liver: lately we have succeeded in culturing leptospira on artificial media in bulk and have experimented on dogs with a vaccine made from such cultures. Complete protection to tests of virulent material results, following two inoculations of treated culture in doses of even 0·1 c.c.

TABLE II.

Leptospira Vaccine—Made from Cultures.

Dogs	69—71	0·1 c.c.	7/8/26 and 20/8/26
,,	72—74	1·0 c.c.	,, ,, ,,
,,	75—77	0·1 c.c.	20/8/26 and 27/8/26
,,	78—80	1·0 c.c.	,, ,, ,,

All dogs tested 10/9/26.

Dogs 69—80—All lived.

,, 81—85 (which had received no vaccine)—All died from jaundice.

Bacillary White Diarrhœa in Fowls.

We refer to this disease because of its recent increasing prevalence and because we feel that the veterinary practitioner must be in a position to advise on its prevention and cure. The rate of spread of B.W.D. all over the country must be expected from the numbers of all kinds of fowls being bred from to-day without adequate supervision by authorities on disease of poultry. The annual losses in chicks from B.W.D. are enormous and the present hatching season is even worse than the last, from reports already to hand.

B.W.D. is fatal to young chicks only, but adult fowls may harbour the infecting agent (*B. pullorum*) while appearing perfectly normal and healthy. Such fowls are termed "carriers" and they are responsible for the perpetuation of the disease from year to year. Rettger and others have worked out the cycle of infection. We have confirmed this work in this country. Chicks may be hatched out in an infected state, or, in some cases, may be infected during the first few days of life by picking up contaminated excreta, etc. The mortality among such chicks varies greatly, depending on the virulence of the infecting agent. Practically every chick in the hatch may be wiped out, or, if the infection is light, the death rate may be extremely low. Survivors in the infected hatch often become "carriers," *B. pullorum* being located in the ovary and infecting many of the eggs laid when the chick reaches maturity, so that the offspring of such hens in their time produce chicks which die of B.W.D., infect other chicks or become "carriers."

We have studied methods for the prevention of the disease, realising very early in our work that curative methods were unpractical. Two points have interested us specially; prevention of spread among chicks and diagnosis of the carrier fowl. Experiments now in progress indicate that where there is reason to suspect B.W.D. from hatching eggs, the dividing of the young chicks into small units tends to prevent its spread. This is in keeping with epidemiological expectations and only concerns the chicks hatched from non-infected eggs in contact immediately after hatching with infected chicks. There is little hope for the chick from infected eggs; our aim must be to prevent the breeding from fowls capable of producing infected eggs, and, if this is not practical, to prevent the spread from chick to chick.

Small lots of an anti-serum have been made by injecting hens, rabbits, sheep and goats with *B. Pullorum*. Laboratory tests with this serum have shown that the disease can be prevented in healthy chicks provided the serum is injected at the same time as, or prior to, the feeding or injecting of the causal organisms. Field trials have been done on a limited scale, but in an experiment in which over 2,000 day-old chicks, bred from hens in which about 50 per cent. were shown to be "carriers," were injected, our conclusions were that serum does prevent infection from chick to chick, but does little to help the "egg-infected" chick. Further experiments are now in progress.

Diagnosis of the "carrier" hen can be made by carrying out agglutination tests or by the results from the intradermal wattle test. Both tests have been described by American workers. We have had occasion to study both methods and have concluded that both may be useful. It is necessary to repeat tests at intervals or all stock passed clean by either test, but we believe B.W.D. can be cleared entirely from any flock by adequate testing of the breeding fowls. The cockerel should be included in all tests done.

We hope to publish an article soon on results of our work on B.W.D.

We do not feel it necessary to point in detail to the relationship of the laboratory and field workers in the above work, but we do want to emphasise that much has been made possible by their close collaboration.

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(2) M'Ewen, A.D.—*Journ. Comp. Path. and Therap.* Vol. XXXIX. Part 4.

(3) Okell, Dalling and Pugh—*Veterinary Journal*, Vol. 81. No. 1.

(4) Houston, A.—Metropolitan Water Board 20th Annual Report, 1925—26.

(5) Buchanan, G.—*British Medical Journ.*, 1924. Journ. II. p. 990.

Discussion.

In opening the discussion, Mr. Montgomerie expressed his particular appreciation of the paper which Mr. Dalling had presented that afternoon. Mr. Dalling was ready to make the long journey from London and had read one of the most interesting and thoughtful papers to which it had ever been their pleasure to listen.

Proceeding, Mr. Montgomerie said, "We have had the normal course of an investigation outlined and the field worker has been assigned his due and proper place in the scheme. It might well be emphasised that the field worker, especially the practitioner, should come first on the scene. He has the opportunity to come in contact with conditions which require investigation and should be the person who draws the attention of the laboratory worker to the problem. Frequently the call comes from another source—a section of the agricultural community, a breed society or other such organisation.

"Occasionally the laboratory worker may appear to invade the field of his colleague, for the careful large scale test of a product, with the necessary controls, is often a time-consuming job which the practitioner cannot undertake. An example of this is to be found in the trial of vaccines and sera prepared for the prevention of lamb dysentery. Yet such products reach a more or less commercial stage when the observations of the practitioner-field-worker, however general they may be, are appreciated by the laboratory worker.

"The suggestion that, in this country as well as abroad, blackleg of cattle may frequently be caused by an organism other than *B. chauvoei* may appear rather disturbing. Vaccination against blackleg in cattle is one of the most successful preventative inoculations we possess—one which has brought our profession much credit. We have believed that these vaccines were made from materia containing *B. chauvoei* or its products. There is no cross immunity between *B. chauvoei* and *Vibrion septique*, yet we know these vaccines are highly successful. Remembering that anærobes have only been carefully isolated and studied in the post-war years we are entitled to wonder if these vaccines are made from pure cultures. Yet we have been told that a double inoculation is necessary to protect against *Vibrion septique* and we know that some of the blackleg preventatives are used as a single inoculation.

"I think text-books tell us that the *B. chauvoei* generally gains entrance to the animal body through infection of a wound in the alimentary canal, and, if I remember correctly, some experiments were conducted which supported this idea. Can Mr. Dalling say if the feeding of *Vibrion septique* under conditions likely to cause injury to the alimentary canal will produce typical blackleg? That on subcutaneous injection this organism does give rise to a blackleg lesion is hardly proof, unless, of course, you accept external wound infection as the usual route.

"While two injections of vaccine made by most methods are necessary to give protection against *Vibrion septique*, McEwan has recently introduced a mode of preparing the vaccine which, by a single injection, gives protection. This piece of work is of much interest and significance. I look forward to reading the result of an extensive field trial of formalised vaccine prepared as McEwan suggests.

"I have not had any experience of anti-*B. chauvoei* and I wonder if it is widely employed. Do practitioners see a sufficient number of blackleg cases alive to make it worth while stocking this serum? If this serum is effective does its action not favour the opinion that *Vibrion septique* is much less a cause of blackleg in this country than the figures of continental workers might suggest?

" In North Wales we hear of many losses among sheep characterised by sudden death and variously named (*e.g.*, strike), according to the locality, time of year, etc. There are those which appear to be true braxy, but I would be glad if Mr. Dalling could tell us which organism causes those deaths in Spring amongst ewes and forward lambs which we meet, or hear about.

" In offering canine leptospiral jaundice for your consideration we are presented with a splendid example of the result of good team work. One can readily picture Pugh bringing this disease, together with a wealth of clinical *data* and material, to the notice of the laboratory workers. The investigation of ' yellows ' was so admirably and skilfully conducted by these three workers that it must be regarded as one of the premier achievements of recent years.

" So far, bacillary white diarrhœa has attracted little attention within North Wales, for it is only recently that poultry keeping has extended beyond the ' barn-door ' type. Mr. Dalling has said that the disease is fatal to young chicks only. I would ask if he has not met the condition as an acute infection of adult birds. Is there any spread of the disease from adult birds directly to other stock, and what is the significance of the test on the cockerel ? May he transmit the disease ? I am interested to hear that the intradermic method of testing may be developed, for I believe that many practitioners will prefer the latter. In using it they can read the results themselves and, without delay yet with great certainty, they can pick out the reactors from the breeding stock.

" I am sure that each of us will wish to discuss this paper and add our quota of thanks to Mr. Dalling."

Others present having contributed to the discussion, Mr. DALLING, in reply, thanked those present for the welcome he had been given and said that the lively discussion that had taken place had amply repaid him for any trouble to which he had gone in preparing the paper and in coming to Bangor to address the Division.

The question of the cause and prevention of blackleg in cattle had been dealt with by Mr. Montgomerie and most of the other speakers. He quite agreed that the disease as it occurred in Britain would appear to be caused mainly by *B. chauvoei*. The fact that histological products made from *B. chauvoei* afforded such protection in the field would amply justify one in making such a deduction. There were, however, instances in which vaccination with such products had apparently yielded poor results. One was cited that day by Mr. Roberts, and occasionally in blackleg districts there were farms on which the disease was not fully protected against by *B. chauvoei* biological products. It would be of considerable scientific interest to investigate the cause of the so-called blackleg on such farms. Another point of which sight must not be lost was the position even to-day in the isolation and purity of anærobes, and therefore the question of the true character of agents used in the immunisation against blackleg. One inoculation of products made from *Vibrion septique* resulted in a certain number of injected animals being immunised. As far as was known, the feeding of cattle and sheep with *B. chauvoei* and *Vibrion septique* cultures had not produced any symptoms of recognisable disease. Research had still to show the necessary conditions of the various body systems for infection to take place in most diseases. From the descriptions given by Mr. Montgomerie, it was probable that some anærobic infection was prevalent in the lambs dying of so-called ' strike.' It had still to be shown that *B. chauvoei* infections occurred in sheep in this country under natural conditions. Protection experiments could be devised to show if an anærobic infection was present in the lambs, and, if so, which was the infecting agent. Investigations were at present in progress on diseases affecting ewes before and after lambing in various parts of the country.

Leptospiral jaundice was a disease quite apart from distemper, though without doubt it would attack dogs suffering from or recovering from distemper. It was

(Continued at foot of next column.)

Cow's Milk as a Factor in the Transmission of certain Diseases to Man (excluding Tuberculosis).*

By G. P. MALE, M.R.C.V.S., Reading.

I do not propose to deal with all the diseases which may be contracted by the human subject as a result of drinking cow's milk.

Tuberculosis has been dealt with so often and the dangers of imbibing tubercle bacilli so thoroughly established, that no one has any doubt now of its seriousness, but with many other diseases the facts have not been so well demonstrated and, with some, there is still doubt as to the part that the cow plays in their dissemination.

With the improved methods of bacteriological examination a more exact knowledge has been obtained, but there is still room for further investigations.

Now that the Milk and Dairies Consolidation Act (1915) has been put into operation, it is equally important for the medical profession as it is for the veterinary profession. Under this Act and Orders, medical officers of health may take samples of milk, may visit any premises where disease is suspected to exist and may stop the supply of milk from any such dairy. This not only applies to tuberculosis but also to other diseases of cows scheduled under the Act, viz. : Acute mastitis, suppuration of the udder, anthrax, foot-and-mouth disease, actinomycosis of the udder, any comatose condition, any septic condition of the uterus, and any infection of the udder or teats which is likely to convey disease.

Under the Milk and Dairies Order (1926) it is required that any person having access to milk, or milk receptacles, as soon as he becomes aware that a member of his household is suffering from any infectious disease, shall immediately notify the occupier of such premises of the fact ; that the occupier shall transmit that notification to the Medical Officer of Health, who may make an examination of such premises and persons, and prohibit their participation in the handling of the milk in any way. He may also, if he has evidence that any person is suffering from infectious disease due to milk, serve a notice prohibiting the use of such milk.

The Act also requires veterinary surgeons to examine the cows to ascertain whether any disease likely to affect the human subject is present in the herd, so that a very exact knowledge is required from both professions. Unfortunately, however, the Ministry of Health in England has left it to local authorities to decide whether regular inspections of dairy cows shall be made in their respective districts, so I am afraid the benefits of the Act will be much restricted and veterinary surgeons will only be called upon to examine cows, in many places, when disease is actually suspected to exist and when its harmful effects have perhaps been in operation for some considerable time.

I propose to deal briefly, first, with some of those diseases affecting cows mentioned in the Act and Order.

(Continued from previous column).

caused by a Leptospira, while recent work had confirmed the view that distemper was caused by an ultravisible virus.

It was evident from the discussion that B.W.D. did not exist to a great extent in North Wales. Poultry keepers there must be in a much happier position that those in the South of England. Infections did occur in adult stock and the causal agent was presumably the same as that infecting chicks. The incidence of the disease in adults was small compared with chicks, though the literature would show that " carrier " hens might, when penned up with clean birds, cause them to become reactors ; recent experiments had not confirmed such work. Cockerels should always be included in tests for " carriers," as a small percentage had been shown to react.

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(1) Anthrax.

Fortunately, this disease is usually rapidly fatal to cows and anthrax bacilli are not usually present in the milk until just previous to death. It does sometimes happen, however, that in an outbreak some affected cows do not succumb to the disease though they may show slight signs of illness accompanied by a rise in temperature, so that if the milk from such a herd is used, the cows should be carefully observed and their temperatures taken frequently for some days while the source of the infection is being ascertained and excluded.

By the Anthrax Order, milk from affected animals, or those suspected of anthrax, as well as those in contact with them, must not be used until it is sterilised.

The earliest time recorded when it has been possible to demonstrate anthrax bacilli in the blood is sixteen to eighteen hours before death, and in one well authenticated case in Scotland seven and a half hours. As hæmorrhages may occur in the udder tissue, it is possible that anthrax bacilli might be present in the milk some hours before death.

Bibbey, a veterinary surgeon, records that a cow which was afterwards proved to have anthrax, lived for three days after the appearance of the first symptoms of illness. During this time the milk was sold, being delivered in one particular street. When it became too offensive it was given to the pigs. Where the milk had been delivered there appeared a disease showing lesions of the skin which had somewhat the appearance of small-pox, causing six deaths which were certified as due to infectious erysipelas. All the pigs died about three days after being given the milk.

Very few deaths in the human subject from anthrax contracted from milk have been diagnosed and put on record, but the dangers from this disease cannot be ignored in view of the above facts.

(2) Actinomycosis of the Udder.

When this disease affects the udder, which is rare, it is either in the form of nodules scattered throughout the gland, particularly in the upper parts, or indurated areas which sometimes involve the skin and suppurate. These lesions may discharge their contents into the milk ducts and may be ingested by man. Unless, however, there is an abrasion of the mucous membrane or a defective tooth through which the organisms can gain entrance to the alveolus, disease is not likely to be set up. If the pus is present in any quantity, it will alter the character of the milk and should then be detected. The larger lesions can be demonstrated by manipulation, while if suppuration occurs the condition is obvious.

(3) Foot-and-Mouth Disease.

In view of the prevalence of foot-and-mouth disease in this country during the last few years, and if milk were the common cause of infection, one would have expected a large number of cases in the human subject. Fortunately this is not the case, although on the Continent, particularly in Germany, a number of outbreaks in human beings has been ascribed to infected milk. There may be several reasons for this rarity.

(1) That infected animals and those in contact are slaughtered immediately. (One argument in favour of the slaughter policy).

(2) That the milk apparently does not contain the virus, but that it reaches the milk only from the lesions on the udder and teats.

(3) That the virus is quickly killed by heat.

(4) Owing to the danger of infection to animals from milk from infected cows, the Ministry of Agriculture requires that it shall be sterilised before leaving the farm.

A circular letter from the Ministry of Health in 1922 with reference to this disease, reads as follows:—

As regards the danger of infection to man, many cases have been reported where illness has occurred as a result of direct or indirect infection from animals suffering from the disease. The bulk of these cases are reported to have occurred in outbreaks following the consumption of milk from affected cows. Some of these outbreaks lack evidence of specificity, but in a certain number of them the symptoms described by different observers have presented a remarkably uniform clinical picture, closely resembling the disease in animals. They include aphthæ on the mouth, fingers, and toes, accompanied by pyrexia. The crucial experiment of successfully transmitting the disease from man to calf has been reported on two occasions by Schantyr (1), and by Bertarelli (2). There can be little doubt, then, as to the transmissibility of foot-and-mouth disease to man.

(4) Acute Mastitis and Suppuration of the Udder.

With regard to acute mastitis and suppuration of the udder, all will agree that the milk from cows affected with these conditions should not be used. There are, however, many cases of slight mastitis in which the milk is not changed much in appearance, or is apparently normal, and there seems to be a great deal of difference of opinion as to the exact significance of this condition in its effects on man. The commonest causes of mastitis are streptococci, occasionally staphylococci, and more rarely the *Bacillus coli* and members of the paratyphoid group of bacilli, also the *Bacillus pyogenes* and diphtheroids.

Septic sore throat is also due to streptococci, and as outbreaks have occurred in areas corresponding to the distribution of milk from certain dairies, the cow has often been incriminated. Sore throat also occurs in conjunction with many scarlet fever and diphtheria epidemics. In the former, streptococci have been found similar to those found in scarlet fever.

Investigations have been made in this country by Savage and others, also in the United States of America, to differentiate between these various types of streptococci, and although great advances have been made, it has been found most difficult to determine either morphologically, culturally, by inoculation methods, by agglutination tests or by their hæmolytic properties the different types of these organisms. It is the general opinion, I believe, that where the streptococci are found in long chains with numerous body cells a bovine origin is indicated.

Savage distinguishes three kinds of organism, the *Streptococcus mastitidis*, the *Streptococcus pyogenes*, and the *Streptococcus anginosus*, the first being found in the udder of the cow and the other two in the human throat. He found that if the first were inoculated into the teats of goats mastitis would be produced, while those of human origin were incapable of causing mastitis in these animals. He concluded, therefore, that the *Streptococcus mastitidis* is not the cause of human disease.

Davies, Smith and Brown, after the performance of many experiments have concluded that

"streptococci of cow mastitis are different from the streptococci of human tonsillitis; virulent streptococci of man do not cause any appreciable inflammation of the cow's udder, mastitis streptococci do not cause affections in man."

Kelly, in a report in 1924 on "Milk-borne Diseases in Massachusetts," says:

"It is to be surmised from this that many, if not all, cases reported of septic sore throat are not connected with milk as a source of infection, and perhaps not with hæmolytic streptococci."

In the list of outbreaks in that State traced to milk during the five years, 1919-23, three were due to sore throat, the source of the infection in each case being from a carrier; in one a milk handler, and in the two others, a case of sore throat in the family of the producer. Although, as Swithinbank and Newman have shown, a number of outbreaks in this country has been milk borne, yet in no case was it definitely proved that the source of infection was not of human origin.

Human sore throat is usually a seasonal disease, whereas cases of mastitis occur throughout the whole year, and those of us who frequently inspect dairy cows know that it is an extremely common disease, also that the milk from slightly affected cows is commonly mixed with other milk. It has been proved also that streptococci and

staphylococci may frequently be found in the udders of apparently healthy cows, and they appear to lead a saprophytic existence, not being pathogenic to the host unless favourable circumstances arise. It would seem then that the case against the cow with regard to this disease must be one of "not proven."

Cow-pox (Variola Vaccinia).

In this country this disease is extremely common; in my experience, there are few herds that have not been affected, and in some it is almost indigenous, so that if any fresh cows are introduced they almost invariably fall victims to it.

The disease is an eruptive one; it affects chiefly the teats and udder, and sometimes other parts of the body as well. The cow's general health does not usually suffer much. The eruptions go through the usual stages, first pimples form, the teats become red and swollen, and vesicles appear. These are usually elliptical on the teats and circular on the udder, depressed in the centre and surrounded by a red inflammatory rim. They become matured about the tenth day and are usually about the size of a bean; later on, dark brown pustules form, which fall off and leave a scar. This condition lasts about twenty-one days. These changes are not always noticed, as during milking the vesicles are ruptured early, while the scabs are rubbed off, producing ulcerating sores which may become infected with various other organisms. I mention these facts as the disease has been confused with other conditions, and cows thus affected have been held responsible for outbreaks of both scarlet fever and diphtheria.

The disease can be transmitted to human beings during the process of milking; I have seen many severe eruptions on the hands, arms, and face as a result, and in some cases where secondary organisms have infected the parts septicæmia follows. As a rule, however, milkers soon become immune and certainly they should need no further vaccination against small-pox.

Occasionally, in children drinking the milk, eruptions occur on the hands and face. I can find, however, no evidence of serious disease resulting from its use, and although I have known milk from many thousands of such cows to have been taken by both children and adults, I have never known any harm result, possibly because most persons are early immunised by vaccination. Those that are not will probably acquire some immunity against small-pox which they would not otherwise obtain; therefore, although some authorities contend that this milk should not be used, I am inclined to think that it may be a benefit rather than the reverse.

There are other pustular affections of the teats and udder due to streptococci and staphylococci, but with proper treatment and care in milking these should not seriously contaminate the milk.

(6) Contagious Abortion.

This is a disease of cows due to the *Bacillus abortus* of Bang; it is extremely common all the world over.

After abortion, the bacilli appear to have their habitat in the udder and are present in the milk, consequently some authorities declare that such milk should be excluded from the market or pasteurised.

Miss Evans in a recent work has pointed out, and Fleischner, Meyer and Shaw have also shown, that the *Bacillus abortus* is very similar to the *Bacillus melitensis* in morphological, cultural and antigenic behaviour, so that they are inclined to consider the latter organism a goat strain of the abortion bacillus. These bacilli have been demonstrated also in the tonsils of a child by Mohler and Traum; antibodies have been found in the blood of numerous children, and suggestions have been made that they were responsible for some cases of abortion in women. I should like to hear from my medical colleagues whether the *Bacillus abortus* has ever been found in human abortions. It seems inconceivable that with such a widespread disease of cows, supposing the human family to be susceptible, abortions due to this cause should not be extremely numerous. From my own experience I would suggest that these organisms are not pathogenic to the human female.

I do not propose to deal in any detail with those diseases derived from human beings engaged in handling the milk. It is well known that such diseases as typhoid fever, paratyphoid fever, diphtheria and scarlet fever are disseminated in milk, due to its having become contaminated by diseased human beings after it leaves the cow.

An epidemiologist knows from the nature of these outbreaks the method of their spread even if he is unable to find the responsible organisms in the milk. Such outbreaks during the last few years have been on the wane, due to a greater knowledge of these diseases, and more care in the production and handling of milk.

I will now make a few remarks on diphtheria and scarlet fever, cases of which have been attributed to a disease of the cow itself, notably by Klein in 1888-90, and Dean and Todd in 1902.

(*A*) Diphtheria.

Macewen in a Report to the Local Government Board in 1914 suggested that the outbreak in the south of London he investigated was due to a disease of the cow. He was, however, unable to prove the existence of diphtheria bacilli in any lesions in the cow, although he found the organisms in ulcerating sores on the fingers of two of the milkers.

With the advance of bacteriological knowledge of this disease there are facts which were not perhaps appreciated when the earliest investigations were made, and it was possibly not realised how frequently the Klebs-Loeffler bacillus can be found in swabs taken from the throats of apparently healthy persons, not only of those that have recovered from the disease, but of others that have never been affected and just act as carriers.

Dr. Thomson, Medical Officer of Health for Deptford, estimates that from 3 per cent. to 9 per cent. of all human subjects are carriers. The late Sir Sims Woodhead stated that the bacillus had been known to remain in human throats for more than 200 days, and other authorities even estimate the duration of its stay in the throat at one year.

In one outbreak with which I was connected in which diphtheria lesions were supposed to be present on the teats of a cow, I found it to be affected with cow-pox, and on swabs being taken from the throats of those handling the milk a quite healthy person was found to be a carrier of the disease, having some time previous to the outbreak been connected with a case of diphtheria in her family. Unfortunately the habit of lubricating the hands with saliva by milkers still exists, and there are many other ways, of course, in which infected persons can contaminate the milk. Gofton sums up the argument against Klein's hypothesis as follows:—

"These experiments of Klein's cannot be regarded as of any value for or against the bovine diphtheria theory, for several reasons. In the 1888 portion of his report, Klein casts doubt on the specificity of the Klebs-Loeffler bacillus, and the organism with which he worked varied in its cultural characters from those of the bacillus now universally recognised as the organism of diphtheria, notably in growing well on gelatine at 20°C. A feature of the Klebs-Loeffler bacillus appears to be its localisation to the seat of inoculation, whilst a striking result of Klein's experiments was that the bacilli entered the circulation and appeared in the udder eruption, and in two cases in the milk. The limited number of his experiments on cows and his inconstant results scarcely justified the general conclusion that a vesico-pustular eruption was a feature of bovine diphtheria, assuming that such a disease exists.

"It is therefore not surprising that his conclusions have come almost universally to be regarded as having been founded on error."

Dean and Todd apparently found the Klebs-Loeffler bacillus on sores of cows' teats and obtained it from the udders of cows, but when material from the teats was injected into calves, the diphtheria bacillus could not be

found, neither did antitoxin protect them against infection, so that the authors concluded that "there was present a specific contagious eruptive condition apart from the diphtheritic infection." How these bacilli came to be present on the cows' teats is still a matter undetermined, although the investigators do not exclude the possibility of infection from human saliva. Although it is possible that the organisms may live in sores on cows' teats, all authorities agree, I think, that diphtheria as a disease occurring naturally in the cow does not exist.

From recent work by Sheather we know that diphtheroids are commonly found in milk. In an examination of 450 samples he found that 79 contained these organisms although the milk was apparently normal.

(*B*) SCARLET FEVER.

Although this disease is not uncommonly spread by milk, the evidence against it being due to a corresponding disease of the cow itself is not more convincing than in the case of diphtheria. This contention arose as a result of an outbreak of scarlet fever at Hendon, which was investigated by Sir William Power. Outbreaks have also been reported upon by Sir Shirley Murphy, and Sir William Hamer and Dr. Jones. It must be borne in mind, as pointed out by Newsholme, that "scarlet fever may be caused by infected milk containing the contagium in such an attenuated form or minute quantity that no symptoms manifest themselves except as anomalous sore throat with fever"; therefore it would be difficult to trace human infection. Also I believe the ætiology of this disease is still somewhat obscure. The streptococcus said by some to be responsible for the disease may be only secondary to, or an accessory factor of, an ultramicroscopic virus.

In all these outbreaks attributed to the cow, lesions were found closely resembling cow-pox; indeed, it was afterwards proved in the Hendon outbreak that these cows were actually suffering from this disease in a somewhat virulent form and further investigations showed where human infection might have contaminated the milk. Swithinbank and Newman, in summing up their observations of this outbreak, say:—

"After the examination on both sides of the question, we are of opinion that the case for cow scarlet fever was not proved."

In the Hendon outbreak the disease was traced by the investigators to milk of a red heifer, and it was suggested that the milk of this animal had a pathogenic quality which possibly gave rise to the death of her calf and subsequently to scarlet fever among the human consumers of her milk. What was the origin of the disease in this heifer is still to be accounted for, and it is suggested that it was due to a particular food which the cow received. The question as to how this food could set up a specific disease in this cow, which could be transmitted to a large number of human beings, is a matter which I leave you to determine.

Although efforts have been made to infect the cow with scarlet fever experimentally, the disease has never, I believe, been reproduced, neither have cows contracted the disease from infected persons, although a great many opportunities constantly occur; if the cow were susceptible we should surely have evidence of the fact. As pointed out by Friedberger and Frohner: "Cows are absolutely immune to scarlet fever."

Jensen also states his opinion:—

"From the evidence that is now available, one is justified in regarding it as established that the outbreaks of scarlet fever in question had no relation to disease in cows, which was in reality only a somewhat unusual form of cow-pox."

I do not hold a brief for the cow, and where human diseases are derived from diseases of cows every effort should be made to investigate them and recognise them with a view to their control in the interests of public health, but the menace in milk has probably been exaggerated.

With the extra facilities given to sanitary authorities by the Milk and Dairies (Consolidation) Act and Orders, by the improvement in methods for pasteurising and

(*Continued at foot of next column.*)

Veterinary Science in Japan.

By FRANK SCHOFIELD, D.V.Sc.

(Reprinted from the Report of Ontario Veterinary College).

During the summer of 1926 the writer, while travelling in Japan, visited both the Veterinary Department of the Imperial University and the Veterinary Laboratory of the Department of Agriculture, with the object of determining the nature of the work being carried on in these institutions. Due to the courtesy of those in charge, much interesting information was obtained which, together with other relative facts, is presented in this paper.

Veterinary Education in Japan.—At the period of the Restoration, 1868, veterinary science, along with the other sciences, was brought to Japan with the introduction of Western civilization. In 1877 a Veterinary Department was created within the Faculty of Agriculture of the Tokyo Imperial University. To-day there are twenty educational institutions giving courses in veterinary science from which have graduated almost ten thousand veterinary surgeons. There is a marked difference in the academic status of these schools. The highest grade is represented by the Veterinary Departments of the Imperial Universities, of which there are two. Here Veterinary Science is considered as a special department in the Faculty of Agriculture. The regular course of study extends over a period of three academic years of seven months each. The entrance requirements for students are about equivalent to junior matriculation. The student enrolment is usually small, twenty to thirty men in all the years. The student fees are small, being less than $20.00 per term. The salaries of professors vary according to rank, a full time professor of a major subject receiving from $2,500 to $3,400. These institutions are financed directly from the Imperial Government. Satisfactory students have little difficulty in securing government positions after graduation. Of the remaining schools, fourteen are connected with Agricultural Colleges as divisions of these institutions. The entrance requirements are low, instruction is poor, with the result that graduates are not well equipped to undertake their work. As well as these, there exist three private veterinary schools, having a large attendance and being well staffed, but the entrance requirements are low, so that the quality of the students is usually poor.

This superabundance of veterinary schools and colleges has its explanation in the Russo-Japanese war of 1904. Fighting had not continued for long before it was discovered that the available veterinary surgeons in Japan were quite inadequate in numbers for the heavy work which had to be done. To protect itself against such a serious defect in the future, the War Department encouraged the formation of any kind of veterinary school. The regulations governing the establishment of schools were simplified and all graduates were granted a license to practise. This has resulted in much hardship among

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(*Continued from previous column.*)

sterilising milk which will enable the medical officer of health, at the first signs of its being infected, to stop the supply, or to sterilise it, and with the rapid improvement which is taking place in the methods of production and handling, I believe that this menace will in a very short time be considerably lessened and eventually eliminated.

. . . . . .

Mr. L. P. Pugh responded to the request of Sir D'Arcy Power (President) by giving a brief description of his attack of gastro-intestinal anthrax contracted by drinking the milk of a cow that died a few hours after removal of the milk from her mammary glands.

He also referred to a peculiar type of serum reaction that occurred ten days after his treatment, the symptoms (cardiac and respiratory distress) being precipitated apparently by ingestion of raw beef sandwiches.

Dr. E. Stolkind remarked that milk was a proved source of infection in typhoid and paratyphoid fever, and in scarlet fever.

the better qualified men, so to-day a strong attempt is being made to abolish most of the schools which are below the standard of the Imperial Universities.

Achievement of the Veterinary Profession.—Great credit must be given to the members of the profession in Japan for the courage and skill with which they have met many difficult situations. Western civilisation came like a flood to Japan and with it Western diseases. Many varieties of pure bred stock were hurriedly being imported by the Japanese government, and with the stock came diseases such as contagious pleuro-pneumonia, rinderpest and other conditions that were unknown in Japan. To-day there is a well-trained force of inspectors controlling up-to-date animal quarantine stations at the chief ports. Contagious pleuro-pneumonia has been eradicated by the drastic method of slaughter, and at the present time foot-and-mouth disease does not exist, while other epidemic diseases are at least being held in check. The difficulties in maintaining healthy herds of animals are unusually great, due to the proximity of Japan to China and Manchuria, where every kind of disease abounds unchecked. The progressive nature of the work undertaken by the government veterinarians is well reflected in the output of the Veterinary Laboratories. During the last year over four hundred litres of anthrax serum, nearly three hundred litres of hog cholera serum, and over fifty thousand doses of rabies vaccine was prepared. Besides these, tens of thousands of doses of other sera, vaccines, bacterins, filtrates and tuberculins were made. The director, Dr. Nitta, has made extensive experiments with the most promising prophylactics for tuberculosis, and is at present testing the value of an attenuated culture of his own. In the direction of research the work of Dr. Tokoshige on epizootic lymphangitis is well known in the West. Much work has been done and some interesting discoveries have been made in connection with diseases which seem to be strictly confined to Japan.

Animal Diseases in Japan.—All of the epidemic diseases common to the West are known in Japan. They have either been imported directly from Europe by the introduction of pure-bred stock or have come *via* the Asiatic mainland. Possibly the most serious is rinderpest, which is constantly creeping in from China. Blackleg, anthrax and hog cholera are fairly common. It is of interest to note that at least one-third of the cases of anthrax occur in horses. Hydrophobia has decreased in a remarkable degree since the extensive use of the prophylactic vaccine. The commonest disease of the horse is strangles, for which both a vaccine and a serum are used extensively. Epizootic lymphangitis, which at one time was very common among the horses of Japan, has been almost entirely eradicated. A most serious condition in dogs is caused by a parasitic nematode, which lives in the heart and large blood vessels, the *Filaria immitis*. The parasite is transmitted by the mosquito, and it is estimated that 85 per cent. of the dog population suffers, from infestation.

Among dairy cattle, tuberculosis causes severe losses. The earlier tests which were made in 1900 revealed the fact that 34 per cent. of these animals were infected. Twenty-three years later the percentage had been reduced to 10·2 per cent. Tuberculosis is still a rare condition among the native animals, which live singly, and almost always in the open. They are not used for milk production, but share almost equally with the horse the heavy draft work of the country. Milk fever is quite common among the imported dairy cattle. Mange in all animals and of all varieties is frequently encountered. Parasitic diseases of sheep became so serious that the industry failed soon after its inception.

Veterinary Practice.—The profession of veterinary surgery and medicine is hardly to be coveted in Japan to-day. There are a few men with large city practices, but the majority are just able to make a living and nothing more. A large number of the graduates of the inferior schools carry on their veterinary practice as an accessory, making their living from some more regular and lucrative form of business. The fees are very low even when compared with the cost of living. A visit in the city will be made for fifty cents, while a trip to the country will only realise from $1.00 to $1.50. The usual fee for a major operation, such as neurectomy, is $5.00. There can be no improvement under the existing system of veterinary education. A Bill which will result in the elimination of the inferior schools and colleges has already reached the Japanese Diet.

Live Stock in Japan.—Although Japan has a population of fifty-six millions of people, her animal population is less than 10 per cent. of that of Canada. The work of the veterinarian is therefore limited by the comparatively few animals owned by the farmers. Labour is cheap, the families are large and so most of the work is done by the peasants themselves. Another important factor is the small size of the farms. Fifty per cent. of the farms have an area of less than two and a half acres, which can be easily cultivated by manual labour. It is interesting to notice that there are more horned cattle used in farm work than horses.

Until recent years stock breeding has not prospered in Japan and chiefly for religious reasons. With the advent of Buddhism, strict edicts were promulgated against the slaughter of any animal. As early as 741 A.D. anyone killing a horse or an ox was flogged with one hundred strokes and heavily fined. For a while the important industry of fishing was ruined and the State had to provide rice for the fishermen who were not allowed any longer to catch and kill fish. Apart from religious reasons, the use of flesh for food is very limited in Japan, also their customs do not require the important by-products of leather, hides, and bristles.

Horse Breeding.—The native horses of Japan are of poor quality, as little attention had been paid to breeding. The experience of the Japanese Government with their remounts during the Boxer War was very unfortunate. Their horses were not only of poor quality, but frequently so vicious that their management became a dangerous and difficult problem. Few of the horses had been castrated. Immediately following the war a law was enacted encouraging castration, which is done free, and offering a small grant of money if the animal should be disabled or die as a result of the operation. In addition to this a Horse Bureau was established with an endowment of $15,000,000 for the purpose of improving the native stock and to provide funds for importation. Thousands of foreign stallions have been imported and about 1,500 are kept constantly for service. Horse racing was encouraged and became very popular.

Sheep Raising.—There are no native breeds of sheep in Japan, so to provide the wool required with the adoption of Western civilisation a large number of sheep was imported in the early eighties. The introduction of sheep was a costly failure, as most of the animals died. At the time it was thought to be due to eating a coarse bamboo grass. Later investigation considers the loss to have been due to parasites, especially the *Oesophagostoma columbiana*. During the last war Japan encountered such difficulties in procuring wool that a further attempt at sheep raising was made. A special bill was passed by the parliament, authorising the purchase of 1,000 head of sheep from abroad each year. A small subsidy of $2.50 per head is granted to any farmer who raises sheep. Most important, however, is the veterinary supervision of these sheep for the purpose of combating the parasites which caused the failure of the early experiments. At present all sick sheep are treated at Government expense. The total number of sheep is about 10,000.

Cattle Breeding.—The native cattle were used almost exclusively as beasts of burden. As long ago as 645 A.D. a milk cow was presented to the court of Japan and from that time on milk was looked upon as a peculiarly valuable food. A century later a dairy herd was attached to the Court and its supervision was placed in the hands of the court physician. Butter was also made for the use of the courtiers. The dairy cattle of modern Japan are all of

foreign importation. Holsteins and Ayrshires have so far proved to be most suitable for the climate. Milk cows number 50,272 and the average yield is about 3,500 lbs. per head per year. Dairying is really a new industry and at present dairy products are very limited. Most of the milk is used in the fresh state. Pasteurisation is required of all milk offered for sale. The price is rather high, varying from twenty to twenty-five cents per pint.

Poultry.—While birds are seen around most farm houses, poultry has not as yet attained any particular development. The egg production is very low, the average being seventy eggs per bird per year. The value of a bird for table purposes is about seventy-five cents. Far more valuable are the birds raised for fighting purposes, which sport still continues in secret. A good fighting cock will easily fetch as much as $50.00.

Dogs and Cats.—These animals abound, but do not hold the affection of the people to-day as in ancient times. A thousand years ago among the wealthy there was a rage for keeping dogs and cats. They received human names and titles and, when they died, elaborate funerals. Kittens born were treated with the same care as was bestowed upon an infant emperor. Beautiful presents were sent to the cat mother, and ladies-in-waiting were appointed to the kittens. At a later date dogs were kept for the purpose of fighting and twelve days were set apart each month to witness the performance. These fads have long since vanished and to-day these animals receive even less attention than in the West.

The remarkable development of the animal industry during the last half century and the present keen interest on the part of both government and people in stock raising, augur well for the future of the veterinary profession. There, as here, the factor of motor power taking the place of horse power must be considered; yet for years to come its influence will not be felt to any appreciable extent.

The Incidence of Tuberculosis in Cattle.

The *Western Morning News* recently published the following interesting letter from Mr. John Dunstan, M.R.C.V.S., of Liskeard, Cornwall :—

" I am afraid that the Cornwall Agricultural Committee are labouring under a delusion with regard to the prevalence of this disease in the county. The present Order deals only with those animals which are in an advanced stage—those which are a distinct danger either to other cattle or human beings—and although the number slaughtered under the Order may be only 202, many others have been sent privately to the knackers in order to avoid publicity. I have been testing cattle for tuberculosis for nearly 30 years now.

" In 1899 I ran a tubercle-free herd of 300 cows, supplying Plymouth with tubercle-free milk. In that herd the number of reactors was 13 per cent., in one particular section of the herd—one farm—it was 50 per cent. In this instance every reactor was slaughtered. During the past five years I have tested a great many herds, and found some—quite few—free, whilst in others I have found considerable variation, from 1 per cent. to 8 per cent., 20 per cent., 22 per cent., 29 per cent., 33 per cent., 39 per cent., 44 per cent., 57 per cent., 62 per cent., 83 per cent., and 86 per cent., the last one only last week, and in very few of these herds would one suspect anything on clinical examination. I am afraid that the prevalence of tubercle is by no means decreasing, but that, on the other hand, it is much more prevalent than 30 years ago.

" There is nothing to prevent animals known to be affected with tubercle being sold in open market; this is, in fact, largely done, and infected animals are then introduced into previously healthy herds, and it is impossible to determine the precise moment at which an affected animal may become a danger."

CLINICAL AND CASE REPORTS.

Reflex Paralysis following Excessive Sexual Excitement.

By Ralph Bennett, F.R.C.V.S., Romford.

Subject.—An Alsatian bitch, aged 20 months; quite healthy and normal, but of a very excitable disposition.

History.—The bitch was served on November 30th and again on December 4th, 1926, by the same dog; the second service being unintentional as far as the owner was concerned—the bitch broke away from restraint and got to the dog on December 4th.

Symptoms.—After the service she showed considerable hysterical excitement and within 24 hours afterwards her jaws were found to be locked. When I saw the bitch on December 7th, she could only open the jaws to the extent of about one inch; it was not possible to force the jaws further apart. Otherwise she appeared quite bright and well. There was no sign of any injury, and the owner assured me that he was certain that the bitch had not received any injury. The bitch was only able to eat finely minced meat and also to drink water, the latter with some difficulty, as the tongue could not be protruded enough to lap easily.

Treatment.—The bitch was kept under close observation, fed on minced meat and given a pill containing ferri phosph., gr. $\frac{1}{2}$; quin. sulph., gr. $\frac{1}{2}$; ext. nucis vom., gr. $\frac{1}{32}$, twice daily for fourteen days, and the course of the facial nerve was massaged.

Course.—This condition of locking of the jaws continued for six weeks, practically unchanged; then there was gradual improvement, ending in complete recovery a few days before the puppies were born.

The bitch during the whole time remained lively and well; the only thing noticeable beyond the locking of the jaws being gradual wasting of the temporal muscles.

The puppies were born on January 30th, 1927, eight fine healthy puppies (seven bitches and one dog). The bitch suckled her puppies the normal time and proved a good mother.

This case seems to have been reflex paralysis following excessive sexual excitement. I have never seen or heard of a similar case and shall be very interested to know if any other member has seen one.

Yew Poisoning in Cattle.

By E. G. Conisbee, M.R.C.V.S., Axminster.

Subjects.—Twelve two-year heifers in fair condition, at pasture in February. They broke bounds into a wood containing yew. Found next morning (about 18 hours later) and removed two miles to fresh pasture. At the end of the journey one, previously noticed to be dull, staggered and fell, and died within a minute or so. The rest appeared satisfactory, and at night all were lying down and cudding and were fed with hay, of which they ate eagerly. Next morning two more were found dead where they had been fed. The others appeared more or less dull, and on rising some were noticed to pass a small amount of dark blood. The nine were now driven a mile to buildings. On the way one staggered and fell, but

recovered sufficiently to rise. On arrival at the buildings each was given about a pint of ol. lini. and a few ounces of whiskey. All now showed more or less dulness, salivation, and two staggered and fell once or twice, but recovered sufficiently to stand in a few minutes. They were now given a few ounces of oil with stimulants, about every hour and a half; bran and linseed mash in small quantities and hay literally in handsful, every hour or two. They now began to exhibit a tenacious, catarrhal, nasal discharge, and this was noted for days after. About midnight, one that had looked comparatively bright, and had been given a bigger feed of hay, collapsed suddenly and died within a minute. There were no further casualties and in a few days they were again turned out, but were unthrifty for some time.

Post-mortem.—The abdomen and rumen of one was opened by the knacker on his cart and the first two handsful of ingesta each contained three or four sprigs of apparently unaltered yew.

Remarks.—It would appear that feeding, except in very small quantities and at frequent intervals, and forced exercise were the two main contra-indications. Although cudding was temporarily in abeyance, the bowels were never quite inactive, nor appetite altogether lost.

Gastritis in Sheep.*

By A. J. KENNEDY, Edinburgh Veterinary College.

History.—We received a call to examine some eighteen months' old, cross-Suffolk hoggs, which had broken into a wheat and clover stubble overnight. Taking a small trocar and cannula and bottles of sol. ammon. aromat., formalin and turpentine, we hastened to the farm. Three hoggs. were already dead and four others were in a loose box, showing great abdominal pain, standing and lying down by turns. The pulse was small and weak in every case, dyspnœa was marked, the conjunctiva was injected. The rumen was dull on percussion, and evidently full of semi-solid ingesta; tympany was not marked. The rest of the flock was examined, but no others were badly affected.

Diagnosis. Impaction of the rumen.

Treatment. As the sheep were in forward condition and could be butchered if likely to die, we decided to use neither strong anti-tympanitics nor the trocar and cannula, for fear of tainting and damaging the mutton. Two to four ounces of castor oil were given to each in warm milk, and the bellies were well kneaded with the intention of softening the impacted mass. Water was allowed and they all drank greedily.

Two of the four were butchered.

Post-mortem Examination showed the rumen to be full of a very foul-smelling mixture of wheat grains, clover, water and castor oil. The interior of the rumen was diffusely inflamed and there was some inflammation of the abomasum.

* Case included in series contributed for award under the N.V.M.A Clinical Prize Scheme for Students.

ABSTRACTS

Observations on Lamb Dysentery.

This article is based on an investigation of lamb dysentery carried out by the authors on a group of farms situated on the western slopes of Pendle Hill in North-East Lancashire. It would appear that the disease has been known in the district for many years. Statements made by farmers regarding the history of the condition in their respective flocks were varied and contradictory, some suggesting that dysentery is related to the ewe itself, others that it is related to the pasture or to infection from the diseased flock.

The average mortality from dysentery on the affected farms during the nine years 1918-26 was 20 per cent. There is a definite relationship between the incidence of the disease and the age of the lamb as illustrated by the record of one flock in which 90 per cent. of all cases occurred within five days of birth and 18 per cent. within the first twenty-four hours. The maximum incidence was 28 per cent. on the second day. The mortality of affected lambs averaged 76 per cent., the average duration of the disease in fatal cases being 3·3 days, the shortest 12 hours. Further, there is a definite relationship between the birth rate on the one hand and the incidence of, and mortality from, dysentery on the other, the maxima of all three occurring in the third and fourth week. The incidence of dysentery in the lambs born per week steadily and progressively increases from 0 per cent. among 32 lambs born in the first week to 54 per cent. among 11 lambs in the sixth week.

The percentage of dysentery in lambs born from ewes whose lambs of the preceding year developed dysentery was abnormally high, suggesting that the disease is related to the ewe, but, on the other hand, the incidence in foster-mothered lambs was not abnormally high, though the majority of the foster-mothers had lost their own lambs from dysentery.

The temperature of affected lambs did not rise above the normal at any stage of the disease, but there was a marked and steady fall during the comatose stage immediately preceding death. The urine showed no important abnormality. Cultures made from the blood immediately after death remained sterile. The blood counts of lambs in the early stages of the disease were normal, but in the final comatose stage there was a reduction of 8 per cent. in red corpuscles and an increase in white cells with a higher percentage of leucocytes compared with lymphocytes.

From repeated examinations of the ewes of an infected flock it would appear that the development of dysentery in the lamb is not associated with any abnormality in the age or clinical condition of the ewe. There were no alterations in the bacterial content or chemical composition of the milk and no cytological changes in the blood.

Morbid Anatomy. Petechial hæmorrhages or small ecchymoses were frequently found on the pericardium, less frequently on the pleura, in the lung, under the peritoneal surface of the liver and occasionally in the suprarenals. Similar lesions were present in the intestines and mesenteric glands. The peritoneum usually

contained a little straw-coloured fluid and in three cases several ounces of blood-stained fluid with clots were present. Recent adhesions between the intestinal coils were noted occasionally, but no generalised peritonitis was present. The abomasum often showed a rosy blush on its mucosa near the pylorus and usually contained cheesy curds mingled with an acid slate-coloured fluid. The characteristic lesions in the intestine were hæmorrhagic discoloration and minute ulcers. Usually both were present. The hæmorrhagic discoloration was of a dark plum colour and usually affected certain coils, being most marked in the jejunum and ileum. It was due to petechial hæmorrhages and ecchymoses and was often associated with vascular engorgement. The ulcers were round and from 1 to 2 m.m. in diameter. They too occurred in certain coils, usually in the areas of hæmorrhagic discoloration, and were sometimes confluent. Their floor was usually yellow and their edge bright red. As a rule, they were visible from the peritoneal surface. Microscopic examination showed that the initial lesion is petechial and non-inflammatory. Small clusters of villi (occasionally one villus) are filled with blood owing to extravasation and vascular engorgement. No bacteria were demonstrated in the first stage of the initial lesion. Later, there is thrombosis followed by liberation of blood pigment, destruction of the surface epithelium, and sometimes coagulation necrosis of the whole villus. At this stage a few bacteria were sometimes found in the tissues or on the surface of the lesion. The ulcer, when well-developed, spreads through the muscularis mucosæ often to the muscle; occasionally there is localised peritonitis. The vessels at its edge are greatly dilated. The superficial part of the floor is completely necrosed and destitute of leucocytes. On its surface there are often, but not always, clusters of gram-positive and gram-negative bacilli morphologically resembling *B. welchii* and *B. coli*. The macroscopic and microscopic appearances of the intestinal lesions, also the frequent occurrence of petechiæ or ecchymoses in other organs, and the failure to demonstrate bacteria in sections of the early lesions is evidence that lamb dysentery is not primarily due to infection. Nevertheless, there is histological evidence that the later development of the ulcer from the initial petechial lesion may be partly due to bacterial infection.

In discussing the ætiology of the disease the authors point out that although certain results of their investigation are in conformity with the disease being primarily of an infectious nature, yet there is strong evidence that lamb dysentery is not primarily an infection, *e.g.*, (1) The contradictory histories of affected farms; (2) The *a priori* improbability of *B. coli* and *B. welchii*, which are normal inhabitants of the intestine, attacking a healthy bowel; (3) The absence of any similar disease in man or animals proved to be due to these organisms; (4) The failure to find organisms in sections of the first stage of the initial lesions or in the blood of cases examined immediately after death; (5) The histology of the intestinal lesion and the occurrence of petechiæ and ecchymoses in other organs; and (6) The remarkably close relationship between the incidence of the disease and the age of the lamb.

There is some similarity between lamb dysentery and human melæna neonatorum or "hæmorrhagic disease of the new born," especially as regards (i) The age of onset, for 90 per cent. of cases of the former and 94 per cent. of the latter occur within the first five days and the age incidence curves are almost identical; (ii) The tendency to petechial hæmorrhages and ecchymoses. On the other hand, in lamb dysentery the small ulcers are usually numerous, most frequently situated in the ileum, but never found in the stomach, and diarrhœa is common; but in melæna the small ulcers are few in number, usually situated in the stomach or duodenum and diarrhœa is not common.

Melæna neonatorum is now generally regarded as a blood dyscrasia and not an infection. It can usually be cured by the intravenous or subcutaneous injection of fresh blood; serum or gelatin is less successful. Therefore, these methods may be successful in treating and in preventing lamb dysentery.

(Hare, Tom, and Glynn, Ernest, *Jour. Path. and Bact.*, 1927, April, Vol. xxx., No. 2, pp. 473-502.)

On Epizootic Abortion in Cattle.

(G. Moussu in *Journal d' Agriculture Pratique*, 9th and 16th January, 1926.)

There is not in existence to-day any recognised anti-abortive vaccine which is truly efficacious. In principle, if there were an effective anti-abortion vaccination, it should be practised specially, and almost exclusively, on heifers. Further research in this direction is necessary.

The old preventive measures keep their use—supervision of the quality of drinking water; suppression or disinfection of pools receiving liquid manure; isolation immediately after abortion of cattle which have aborted, and systematic disinfection of the genital passages by irrigations with boiled water, then with solutions of iodine in water (1 to 1,000), every day for a fortnight; or, better still, the use of antiseptic pessaries; isolation of cows about to abort; disinfection of stables; avoiding the serving of healthy cows by a bull that has already served cows which have aborted.

(Ex. *Revue Generale de Medecine Veterinaire*, January, 1927.) R. L. Higgins.

H.M. Stationery Office Publications.

The undermentioned have been published during the week. Copies can be purchased through any bookseller, or directly from H.M. Stationery Office, at the following addresses:—London: Adastral House, Kingsway, W.C.2, and 28 Abingdon Street, S.W.1; Cardiff: 1 St. Andrew's Crescent; Manchester: York Street; Edinburgh: 120 George Street.

	Price Net	*Post Free*
Statutory Rules and Orders, 1927:	s. d.	s. d.
367. Therapeutic Substances. The Therapeutic Substances Act, 1925 (Date of Commencement) Order 1927, dated April 22nd, 1927	0 1	0 1½
369. Animal. Diseases of Animals. The Animals (Landing from Ireland, Channel Islands and Isle of Man) Amendment Order of 1927, dated April 27th, 1927	0 1	0 1½

Victoria Veterinary Benevolent Fund.

A meeting of the Council of the Victoria Veterinary Benevolent Fund was held at the Royal College of Veterinary Surgeons, 10 Red Lion Square, London, on Thursday, April 7th, 1927, when there were present: Mr. S. H. Slocock (in the Chair), Major J. Abson, Lieut.-Col. J. W. Brittlebank, Professor J. B. Buxton, Mr. Henry Dawes, Mr. A. Gofton, Mr. F. L. Gooch, Mr. J. W. McIntosh, Major-General Sir John Moore, Mr. A. M. Munro, Mr. H. Sumner, Captain S. Villar, Mr. E. Alfred West, Professor G. H. Wooldridge and Lieut.-Col. T. Dunlop Young.

The *Minutes* of the previous quarterly meeting, having been published, were taken as read and signed as correct.

Correspondence.—(a) Letters of apology for absence were received from Major T. M. Inglis, Mr. J. Ewing Johnstone, Mr. R. B. Nelder, Major C. W. Townsend and Mr. W. Jackson Young.

(b) Letters were received from Mr. E. Whitley Baker, offering to double his subscription if a number of other members would do the same. The Secretary submitted a reply he had sent to Mr. Baker, which was approved.

(c) A letter was received from Mr. H. P. Standley, sending a Christmas donation of £5, and the Secretary was instructed to convey to him the thanks of the Council for his gift.

Secretary's Report.

The following report of the Secretary was received and adopted:—

Since the previous meeting the following donations have been received:—

	£	s.	d.
Mrs. Stuart		10	6
W. E. Ison: Collecting Box		12	6
Mark Tailby	1	1	0
H. W. Steele Bodger: Collecting Box ...	1	1	0
Bolton's Cinema	23	2	0
H. P. Standley	5	0	0
Central V.M.A.: Collecting Box	2	4	7
Colonel R. J. Stordy	5	5	0
Captain L. S Balls	5	5	0
J. Storrar: Collecting Box	1	2	0
Mrs. G. M. Coe	2	2	0
M. Robinson, Life Member	10	10	0
Midland Counties' V.M.A....	5	0	0
	£62	15	7

The Audited Accounts for the year, 1926, show that we spent about £17 more than we received. This is a much more satisfactory state of affairs than I anticipated towards the end of the year, and my fears for our financial position led me to make an appeal through the columns of the *Veterinary Record*. Mr. E. Whitley Baker made the offer that he would double his subscription of one guinea if 150 others would do the same, but though I advertised this offer, only two members responded. Mr. Baker did double his subscription and offers to do the same this year provided 150 other members will double theirs by midsummer. The publicity given by the *Veterinary Record* to the needs of the Fund is highly appreciated, and the cases you have to consider to-day are proof that the continued support of members of the profession is an absolute necessity. All we received from members' subscriptions last year was £445 16s. 9d., less by £50 than the amount received in 1925. Yet the total amount of relief given was £1,248 1s. 8d., an increase of £210 over the previous year. It is obvious that if the Fund is to continue its beneficient work, it cannot do so with satisfaction if only one-third of the sum spent in relief is met by members' subscriptions. The Council may, however, be congratulated on the fact that, though in the thirty years of its existence it has distributed £12,000 in relief, at the present moment its capital is about £24,000.

Life Member.

It was unanimously resolved that Mr. M. Robinson, M.R.C.V.S., of Barnsley, be elected a Life Member of the Fund.

Cases.

No. 19. Widow, aged 67, one son and one daughter; both married with children. No income and no permanent help.

It was resolved that a grant of 10s. per week be continued.

No. 47. Member, aged 64, infirm and helpless. No income.

It was resolved that this case be left to the Executive Committee with power to continue the grant of 15s. a week or to make any other arrangement which may be for the benefit of the recipient.

No. 90. Widow, aged 26, two children under six. Training to be a shorthand typist.

It was resolved that the grant of £1 be continued for the present quarter only.

No. 101. Widow, aged 67, two daughters, nurses; one son a cripple.

It was resolved that the grant in this case be discontinued.

No. 103. Daughter of deceased member, aged 57; nurse. Seriously ill and confined to bed.

It was resolved that a grant of £1 weekly be made as from 1st April.

No. 104. Widow, aged 45; no children, no income, destitute.

It was resolved that a grant of £1 a week be made for the present quarter.

No. 105. Widow, aged 39; four children; no income.

It was resolved that a grant of £10 be made in this case, to be allocated by a member practising in the district, and that efforts be made to get two of the children into a Children's Home.

No. 106. Member, aged 36, ill and destitute.

The Executive Committee reported that they had made an emergency grant of £2 10s. in this case, but that the member had since died. The action of the Executive Committee was approved.

Frank Garnett Annuity.—It was resolved to recommend to the Council of the Royal College of Veterinary Surgeons that Mr. James Rowe, M.R.C.V.S., aged 79, be awarded the Frank Garnett Annuity in recognition of his services to the profession, his age and his failing health.

Annual Report.—A draft Annual Report was submitted and considered, and subject to a few minor verbal alterations it was resolved that the Report be approved for issue to the members.

R.C.V.S. Library.

The following books have been added to the Library during the past week:—Leblois, "Dermatologie Animale (Chien et Chat)"; Lesbouyries, "La Tuberculose des Carnivores Domestiques"; Fream, "Elements of Agriculture"; Reeks, "Common Colics of the Horse, Fourth Edition"; Kallert, "Die Konservierung von Fleisch durch das Gefrierverfahren"; Cameron, "Diseases of Animals in Relation to Man"; London School of Hygiene and Tropical Medicine, Collected Addresses and Laboratory Studies, Vol. 2; Royal Agricultural Society of England, Agricultural Research in 1925; Meggitt, "On a Collection of Burmese Cestodes" (pamphlet); Yoking Oxen to the Plough, A new system" (pamphlet); "Vitamin A in Poultry, Flesh and Fat" (pamphlet); and "Lice, Mange and Ticks of Horses, and Methods of Control and Eradication" (pamphlet).

Books may be borrowed from the Library by members of the College on payment of postage both ways. Apply to the Librarian, 10 Red Lion Square, London, W.C.1.

Important Notice. The Librarian regrets to report that the following volume has been borrowed from the Library by an unknown borrower and has not been returned:—*Notes on the Composition of Scientific Papers, Albutt.* If this catches the eye of the member who retains the book, will he please return it at once to the Librarian, 10 Red Lion Square, London, W.C.1.

DIVISIONAL REPORTS.

Lancashire Division.

MEETING AT LIVERPOOL.

(*Continued from page* 448.)

Mr. J. O. POWLEY said that as a whole-time official he would like to say that he had the interests of practitioners at heart. He could claim to know as many practitioners as the majority of men in the country, and the nature of his duties compelled him to take an interest in them and to try and look after them, and on that ground he felt that he could do a little good, even to practitioners, should he be elected a member of the Council. He asked the members to do their best to see that the local representatives should be elected so that they could use their influence in expressing the views of the North Country veterinarian. (Hear, hear.)

Professor S. H. GAIGER said he did not really want to say anything, except perhaps that he was not an official of any kind. (Laughter.) He had been a member of Council for nine years and during that time he had done his best for the interests of the profession as a whole and if elected again, as he hoped to be, he would continue to do his best for all concerned. (Applause.)

The CHAIRMAN said they had heard all three candidates; their addresses were characteristic of the men, and they could not get three better men to represent them in the North. He again appealed to the members to see that when the election day came their three representatives were returned, and he hoped at the top of the poll.

The SECRETARY read a circular from the Field Distemper Fund drawing the attention of the members to the Dogs (Protection) Bill, and suggesting that the local members of Parliament should be asked to vote against the Bill. He added that probably the members had already read the reports and that he need not say any more to emphasise the importance of urging upon all members of the profession to use their influence to secure the rejection of that Bill.

Mr. MATTHEWS said he did not think they should be apathetic in the matter, and if they could strengthen the hands of the Parliamentary Committee and of the President of the Royal College he thought they should do so by a motion. The President expressed himself very well on the matter at the meeting of the British Medical Association, as reported in *The Veterinary Record*. If they were ready to accept a motion, he would move that they support the sentiments expressed by the President of the Royal College in any way that might be useful either to the Parliamentary Committee, or to the President himself.

The CHAIRMAN: Will you propose a resolution to that effect and, if it is carried, we can forward it to the proper quarter?

Mr. H. T. MATTHEWS said he would move that the Association fully support the sentiments expressed by the President of the Royal College on the question of the Dogs' (Protection) Bill.

Mr. A. W. NOEL PILLERS seconded, and said he did not know what good it would be to send the resolution to the Parliamentary Committee, which did not meet for three months, whereas the Bill would come before Parliament that month. They wanted something more energetic than that. He should like to see prompt action taken.

Mr. MATTHEWS asked whether it would be any good sending the resolution to the President of the Royal College for him to use as he thought fit.

Professor GAIGER suggested that the resolution might also be sent to the "National" Association for them to make representations with regard to it.

The CHAIRMAN thought Professor Gaiger's suggestion a good one.

Professor GAIGER thereupon moved, and Mr. MATTHEWS seconded and it was carried, that the resolution suggested should be forwarded to the National Veterinary Association and to the President of the R.C.V.S.

EXHIBITS BY PROFESSOR GAIGER.

Professor S. H. GAIGER, F.R.C.V.S., then gave a most instructive address, which was illustrated by bacteriological exhibits and demonstrations. The seventy mounted specimens were prepared by a modified Kaiserling method and mounted in arsenic glycerine gelatine, or in arsenic glycerine solution, mounted on ivorine sheets. He pointed out that the collection had been got together for teaching purposes during the twelve months that the new Department of Veterinary Pathology had been in existence in the University.

The first series comprised twenty specimens of tuberculosis from the horse, ox, pig and fish. There were specimens from two cases in the horse. The first case occurred in the practice of Mr. Warburton, M.R.C.V.S. It was a light draught gelding purchased in 1921 as a four-year-old at a North Wales repository, working for a Liverpool fruiterer till 1926, when it was destroyed for tuberculosis at the age of nine years. The horse was stabled in Liverpool under good conditions. It had been off work for ten days with catarrh when it first came to Liverpool in 1921. In 1925 he was again off work for ten days, being "off colour," with indifferent appetite, temperature 102°F., and slight loss of condition. After rest and tonics he returned to work. In September, 1926, the horse was ill again, with temperature 102°F., pulse 60, respirations 30, capricious appetite, loss of condition, debility, both lungs abnormal on auscultation. He went into hospital where it was noted the temperature varied from 101° to 103°F., polyuria was present, a short dry cough, no nasal discharge. The ophthalmic and intradermal tests for tuberculosis were applied and positive reactions were obtained. The *post-mortem* lesions were in the lungs, spleen, bronchial and mediastinal glands. The bronchial glands were exhibited as the site of the primary lesion—obviously an old-standing lesion—showing broken-down centres. The lungs were shown in section with very numerous miliary tubercles, only about one-third of the lung tissue remaining unaffected. A portion of gland had been sent to Dr. Stanley Griffith, who had isolated an acid-fast bacillus of the bovine type.

The second case in the horse had been sent by Miss Knight, B.V.Sc., M.R.C.V.S., from Mr. Barker's practice at Hereford. The horse was rising five years, and had been ailing since weaned. Latterly the illness became more serious, and there was an attack of colic. Round worms were present in the fæces, but the case did not respond to worm treatment. The ophthalmic tuberculin test was applied and the result was positive. There was no cough, the temperature was constantly above normal, being 101° to 105°F. The appetite was poor and the condition emaciation. *Post-mortem* lesions were found in the lungs and spleen, there were thrombosis of the mesenteric arteries, peritonitis, and about two bucketsful of fluid in the abdominal cavity. The liver was greatly enlarged and light in colour. The spleen lesions were tumour-like and the size of a tennis ball. These were exhibited. Cultures were not made from this case through an oversight.

The following specimens of tuberculosis in the ox were exhibited: Lung showing lesions on the pleura; lung, showing encapsuled lesion in the parenchyma; spleen, two specimens showing mild and heavy pulp infection; pancreas, showing lesions in the pancreatic tissue; liver, showing encapsuled lesion; diaphragm, showing lesions on the peritoneal surface; prescapular lymph gland in section, showing the enormous size to which this gland had developed from abscess formation, being, when fresh, the size of a football; bronchial lymph gland, showing encapsuled lesions; heart, showing lesions in the heart muscle; heart, showing extensive pericarditis; udder, showing a tinge of discoloration from inflammation, and one or two nodules; intestine, showing diffuse tuberculous enteritis.

Fom the pig were shown a lung showing extensive pneumonia and miliary tuberculous nodules, and a spleen

with tuberculous lesions which had caused a curious deformity in the organ, one edge of it being folded over and apparently buttoned back by one of the lesions.

From the fish, tuberculous lesions were exhibited from the bones of the vertebræ and the roe of a halibut. This fish was seen to be diseased by a fishmonger in Birkenhead, and sent to Mr. Torrance, M.R.C.V.S., who sent portions to the Department of Veterinary Pathology. Dr. Stanley Griffith isolated a tubercle bacillus of the cold-blooded animal type.

In connection with tuberculosis, tubes of Calmette and Guerin's B.C.G. vaccine and a culture of the B.C.G. tubercle bacillus from which the vaccine is made, were exhibited.

The next series of specimens comprised five ox tongues affected with foot-and-mouth disease, and a number of mounted mouth and foot lesions from the guinea-pig, the latter having been kindly lent by Professor Beattie.

Next were shown the lesions of lamb dysentery, the specimens illustrating the ulcerations in the bowels and the adhesions between the bowels themselves and the bowels and abdominal wall.

Other specimens were then exhibited, illustrating: swine fever, Johne's disease, caseous lymphadenitis, "liver abscess" in Canadian cattle, bacterial necrosis in cattle and sheep, actinomycosis of the ox's jaw, melanosis of the liver of the ox, anthracosis of the lung of the ox, "spotted kidney" in the calf, hydronephrosis in the ox, and verrucose endocarditis in the ox.

A series of specimens was then shown illustrating parasite infestation. Five specimens showed the changes in the ox's liver brought about by *Fasciola hepatica*, and there was an interesting specimen of crushed liver parenchyma in acute distomatosis in the sheep, showing liver flukes in various stages of growth. Other parasites shown were *Ascaris lumbricoides*, protruding from the intestine of the pig and from the bile ducts of the pig's liver, *Gastrophilus intestinalis* in large numbers on the cuticular portion of the horse's stomach, *Œsophagostomum columbianum* in the wall of the intestine of the ox, early cysts of *Echinococcus polymorphus* in the liver of the ox, and *Anaplocephala perfoliata* found attached in large numbers to the ileocæcal valve of a horse.

Then a number of tumours were shown—a chondroma from an ox's rib, a sarcoma from the lung of an ox, and another from the same organ in the dog, multiple fibromata on the peritoneum of the ox, scirrhous carcinoma from the mammary gland of a bitch, and a fine example of infectious sarcoma from the liver of a fowl.

Finally, a miscellaneous collection of lesions in various species of animals was shown, concerning some of which the opinion of the meeting was asked. One specimen caused particular interest—a specimen tube containing the seeds of a species of Ranunculus found by Mr. Kendrick, M.R.C.V.S., as the cause of enteritis and death in a bovine patient.

Mr. G. MAYALL said he was interested in the specimen of tuberculosis in the horse, but he did not hear anything much said about the clinical symptoms, except that the horse gradually wasted away. They were very grateful to the Professor for showing them these cases. With regard to the question of dysentery in lambs, in which he was much interested, he had made himself acquainted with English, French and German literature on the subject, and just before that meeting he looked up some books on sheep diseases, and in only one, a work by Professor Oppenheim, of the Hanover Veterinary School, did he find any long account of dysentery in lambs. He did not hear Professor Gaiger say anything about cases of dysentery in lambs. The German professor thought there were two bacilli, but whether this was correct or not time alone would show. The question of dysentery in lambs was a big question which ought to be settled, and it would reflect credit on the profession when it was settled.

Professor GAIGER said that, with referece to dysentery in lambs, there was another kind of dysentery which occurred in Yorkshire and which they called "ray" or "scour." He did not know whether the "ray" in Yorkshire was the same as what was known as the Northumberland lamb disease, from which the specimens which he had shown that afternoon came. There had been a great deal of work done on that disease since 1919, and he himself was inclined to the view that the exciting cause was a virulent form of *Bacillus coli*. Further research would, however, possibly throw more light upon it. One would not like to be dogmatic about this disease, but it was undoubtedly one of the most serious diseases connected with the sheep industry. They got isolated areas of infection; there was, for instance, the Dunkeld district in Perthshire, where they got typical Northumberland disease, also in the Mull of Cantyre, another centre, and also in Worcestershire and in Cornwall. How these were brought about he did not know, except by moving stock in lambing time, and it could be spread while lambing was in progress. It cropped up year after year, and it took seven years to produce comparative immunity, because they never got total immunity and it rose to a pitch and then declined again. The rise of the curve of this disease was between four and five years after infection first broke out. The subject was a very large one and there was a tremendous amount of information about it, but there were points that still wanted clearing up.

Dr. T. HARE said that Mr. Mayall's remarks should not be passed over without notice, because a great deal of credit would redound to the veterinary profession, and largely to Professor Gaiger, in this matter, in that they owed it to the Professor for having laid some very valuable facts before the investigators as far back as 1921 when he was at Glasgow, and since then their knowledge of the disease had been gradually, though slowly, increasing. In conjunction with Professor Glynn he (the speaker) had been making an attempt to add a little more to their knowledge of the disease in Lancashire, and he hoped that their work would not be entirely without some good results. It was so difficult, large and undecided a question that it was one that could not be conveniently discussed at such a meeting as that, but if he might add one little personal hope it was that, whatever happened, however diverse the opinion and information might be, the investigators in the veterinary profession would co-operate with one another and pool their resources and endeavour to attack the problem as a conjoint operation, each, of course, working in his own individual direction. It wanted a big attack on these points, and one which required careful preparation. Now that Professor Gaiger was in Liverpool he hoped that the Professor would be able to give them the benefit of his great experience in helping towards the attainment of their desire. He had found the name "ray" given to the disease in Lancashire. Sheep diseases had many names, and "ray" or "scour" were not the only names given for lamb dysentery in Yorkshire, but it was also found in the hills in Lancashire. The names appeared to vary from generation to generation; in the previous generation it was known as "scour," but the present generation spoke of it as "black scour," and the difficulty was to determine whether "scour" and "black scour" were one and the same disease. He hoped their profession would acknowledge the great work of Professor Gaiger.

Professor GAIGER then gave a lantern demonstration on some of the diseases of sheep—braxy, lamb dysentery and scrapie. The lantern slides of braxy were accompanied by a detailed account of the method of laboratory and field investigation into diseases of unknown causation, in order to give practitioners an insight into the laborious methods which had to be employed to establish their knowledge of causation, etc., upon a sound basis, leading to field methods of prevention.

The CHAIRMAN said that before leaving the lecture room they would be remiss if they did not show their appreciation of the instructive and interesting demonstration given to them that afternoon. (Applause.) They would remember the Professor's hospitality to them in entertaining them at tea, and he hoped the members would show their appreciation of the social and scientific entertainment which they had had. He proposed a hearty vote of thanks to the Professor.

Mr. W. WOODS, in seconding a vote of thanks to Professor Gaiger, said he did so with special pleasure as he claimed to

be the source of origin of the Chair which Professor Gaiger now occupied. He (the speaker) was President of the University Veterinary Medical Association, and made an appeal to any rich people with £30,000 to spare to establish an animal research laboratory in connection with the University, and he understood that as an outcome of that the present Chair was established (Applause). He did not mean to say that that was an actual fact, but he was told that his suggestion was the germ. (Laughter and Hear, hear.) What struck him was that those older than himself would remember that when they had specimens given to them the examiner used to ask them what certain things were, and they had a number of things that looked liked bits of boiled tripe, and the only way of answering the questions as to what they were was to get a tip beforehand. (Laughter.) Now they had the exact opposite—the magnified specimens. In the old days they used to have a "jolly good guess" at what things were, but now there was no excuse whatever for the student, and a good deal of this was due to Professor Gaiger's methods. (Hear, hear.)

The vote of thanks having been carried with acclamation,

Professor GAIGER, in reply, thanked all those who had been kind enough to send material to the Department, and expressed a wish for more. He promised to give practitioners all the help he could.

The members then proceeded to the Department of Veterinary Pathology, where microscope and other demonstrations had been arranged. The streptothrix found in abscesses in Canadian cattle and the diphtheroid bacillus sometimes found in bovine mastitis were demonstrated under the microscope and in culture. Other microscope and culture demonstrations were—anthrax, tubercle bacilli in milk, Johne's bacilli in smears from the intestinal mucosa compared with tubercle bacilli prepared in the same manner from a case of diffuse tuberculous enteritis.

The members were particularly interested in demonstrations of the method of making and concentrating tuberculin, and in the more recent methods of cultivating anærobic bacteria.

Further interesting discussions took place in the various rooms in the Department before the gathering broke up.

JOHN SPRUELL,
Hon. Secretary.

North Wales Division.*

ANNUAL MEETING AT BANGOR.

The annual meeting of this Division was held in the University College of North Wales (Memorial Buildings), Bangor, on Friday, February 25th, 1927.

In the unavoidable absence of the President, Mr. J. E. Mills, the chair was occupied by Mr. Matthews. There were also present Messrs. F. Booth, H. V. Hughes, R. Jones, Wynn Lloyd, R. F. Montgomerie, Jones Roberts, W. H. Savage, Dr. Share-Jones, Messrs. O. Thomas, H. Williams, and J. H. Wynne. The visitors included Major T. Dalling (London), Dr. Owen, Bangor (President of the North Wales Branch of the British Medical Association), Dr. C. L. Walton and Professor R. G. White, both of Bangor University College.

Apologies for absence were received from Messrs. Cane and Cartwright, Dr. Griffith Evans, Professor S. H. Gaiger, Major F. Hobday, Messrs. W. Hughes, Lloyd Jones, Rhydwen Jones, J. E. Mills, R. S. Smyth, and Professor Wooldridge.

The minutes of the last meeting, having been published, were taken as read.

The correspondence included: 1. A letter from the Registrar of the University College, Bangor, inviting the Division to hold their meeting in the College Buildings. Mr. MATTHEWS proposed, and Mr. R. JONES seconded, that the best thanks of the meeting be tendered to the authorities of the College for their kind invitation.

2. A letter from the General Secretary of the N.V.M.A. enclosing a copy of Sir John Moore's report on the Jubilee Congress of the Royal Sanitary Institute. The letter stated that, in accordance with the recommendations of Sir John Moore, representations had been made to the Institute that the "Veterinary Inspectors' Section" should in future be called the "Section of Veterinary Preventive Medicine."

3. A letter from the General Secretary of the National Veterinary Medical Association asking the opinion of the Division as to the desirability of controlling cows reacting to the tuberculin test, and, if desirable, what form the control should take. After considerable discussion the meeting decided:—"That the control of reactors to the Tuberculin test is not practicable until legislative measures are enforced for the compulsory testing of cattle."

Major T. DALLING was then called upon to read his paper entitled "A Consideration of Some Diseases of Animals—The Laboratory and Field Worker." (This paper, which was illustrated by a number of interesting lantern slides, appears, together with the discussion which ensued, at the commencement of this issue.—Ed.).

Mr. MONTGOMERIE opened the discussion, in which Dr. Share-Jones, Messrs. Booth, H. V. Hughes, H. Williams, Wynn Lloyd, and Jones-Roberts took further part.

After Major DALLING had replied, the Chairman proposed a very hearty vote of thanks to him for his very instructive paper and also to Mr. Montgomerie for the able way in which he had opened the discussion. This was carried unanimously.

ELECTION OF OFFICERS: *President.*—Mr. J. Matthews.

Vice-Presidents.—Mr. J. E. Mills (the retiring President), and Dr. Share-Jones.

Hon. Treasurer.—Mr. R. Jones (re-elected).

Hon. Secretary.—Mr. J. H. Wynne stated that he thought the time had arrived when he should be relieved of his office. Several members spoke of the very effective way in which Mr. Wynne had carried out the onerous duties of Secretary. He had been instrumental in making the Division a very flourishing society, and the membership had largely increased during his term of office. The meeting resolved:—"That in accepting Mr. Wynne's resignation from the Secretaryship, this Division desires to place on record its high appreciation of his valuable and unsparing efforts on behalf of the Division during the three and a half years in which he has been in office." Mr. Howel V. Hughes was elected his successor.

It was resolved that a *Council* be formed consisting of the officers, together with Messrs. Montgomerie and Wynne.

Election to Membership.—Professor S. H. Gaiger (Liverpool) was unanimously elected a member of the Division.

During the afternoon the members were entertained to tea by Messrs. Montgomerie and Savage, and a vote of thanks was accorded to these gentlemen for their hospitality, and also to Mr. Wright for kindly operating the lantern.

The Minister of Agriculture has, it was stated in the House of Commons recently, "not the smallest intention of altering his decision with regard to the introduction of Canadian cows and heifers."

A Frizington butcher was summoned for having slaughtered a cow without giving notice, but as he was able to prove that the beast had strangled itself the magistrates dismissed the case. The solicitor for the prosecution contended that a dead animal could be slaughtered, but the Bench thought otherwise.

* Received on April 4th.

NOTES AND NEWS.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events.

Sept. 12-17th.—N.V.M.A. Congress at Torquay.

May 23rd—Meeting of the Editorial Committee, N.V.M.A., at 4-30 p.m.

May 25th—Meeting of the Comparative Section of the Royal Society of Medicine, 1 Wimpole St., W.

May 26th—Meeting of the South-Eastern Division at Maidstone.

June 2nd—R.C.V.S. Annual General Meeting (Council Election), 12 noon, 10 Red Lion Square, W.C.

Annual General Meeting of the Victoria Veterinary Benevolent Fund, to follow the above.

June 29th—R.C.V.S. Annual Dinner, 7-30 p.m., Hotel Victoria, Northumberland Avenue, W.C.

Royal Support for the R.V.C. Rebuilding Fund.

We are glad to be able to record that His Majesty the King, H.R.H. the Prince of Wales and H.R.H. the Duke of Connaught have been graciously pleased to make the following donations to the Rebuilding Fund of the Royal Veterinary College, Camden Town:—

	£	s.	d.
His Majesty the King	105	0	0
H.R.H. the Prince of Wales	52	10	0
H.R.H. the Duke of Connaught	26	5	0

Edinburgh University Chair for Animal Diseases Research.

"Chiefly owing to the generosity of a number of Americans, a new chair is to be established at Edinburgh University for research into animal diseases," says the parliamentary correspondent of the *Daily Mail*, in the issue of May 10th.

"Sir John Gilmour (the Secretary of State for Scotland) said to-day that a body of Americans under the auspices of the International Educational Board, who have been travelling through Europe studying the question of animal diseases, came to the conclusion that Edinburgh University was the best centre for research.

"They have accordingly made an offer of £30,000 towards the establishment of a chair of research there. The Government will make a contribution; so, too, will Edinburgh University itself, the Earl of Abingdon, and a number of others, so that the establishment of the chair is assured.

"On the same subject of animal diseases Sir John mentioned that much important research has been done by the Rowatt Institute at Aberdeen, in conjunction with institutions in the Dominions, into diseases of sheep, with the result that the establishment of sheep farming in Kenya on a large scale seems possible."

Army Veterinary Service.

London Gazette—War Office—Territorial Army.

May 10th—Maj. W. H. J. Kirk ceases to comd. a Vet. Evac. Stn. (March 24th).

Personal.

Birth.—Dickinson.—May 7th, 1927, to Margery, wife of H. T. Dickinson, of Chippenham, and daughter of G. H. Williams, M.R.C.V.S., a daughter.

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Marriage.—Davenport—Broadbent.—On April 20th, 1927, at St. John's Church, Hove, by Canon H. Monroe (uncle of the bride), assisted by the Rev. A. C. Macnutt, Major Colin Davenport, O.B.E., R.A.V.C., to Moira, younger daughter of Dr. and Mrs. Walter Broadbent, of Brunswick Square, Hove, Brighton.

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Call to the Bar.—Among those called to the Bar on the occasion of the "call-night" at the Inns of Court on May 11th, was Major A. C. Duncan, F.R.C.V.S., of Cirencester (from Gray's Inn).

R.C.V.S. Obituary.

Orton, E. C., Major, R.A.V.C. (ret.), 31 Llewellyn Road, Leamington Spa. Graduated, Edinburgh, 16th July, 1898. Died 8th May, 1927.

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Mr. T. Daly, M.R.C.V.S.

"The Irish veterinary profession has lost one of its most esteemed and efficient members by the death of Mr. Timothy Daly, M.R.C.V.S., of Sandymount, Co. Dublin," says the *Dublin Evening Mail* of May 9th.

"The late Mr. Daly was attached to the staff of the Veterinary Department of the late and the present Governments, and the Port of Dublin was the sphere of his labours for the greater part of his professional career. Of a gentle and kindly disposition, his courtesy in dealing with all classes of the community with which he came in contact made the name of Tim Daly one of the best known and respected at the shipping ports. A member of a well-known Kildare family, Mr. Daly was born 69 years ago in Sallins, but had resided for the last forty years in Sandymount, where he was well and popularly known.

"As a young man he was a follower of the Kildare Hounds, and rode many good horses at Punchestown and at other meetings in his native county. He leaves a widow and grown up family to mourn his loss."

Tribute to Devon Inspector.

"The regret voiced by Mr. W. Lake at yesterday's meeting of the Diseases of Animals Sub-Committee of the Devon County Council at the retirement of Mr. R. Edwards, F.R.C.V.S., Inspector under the Ministry of Agriculture, will be shared by all who have known Mr. Edwards during the six years he has been in Devon," says the *Devon and Exeter Gazette* of March 25th. "Mr. Edwards has been keen on his work, but has done his duty with tact and consideration and has always been eager to assist with advice. Mr. Edwards paid a tribute to the assistance he had received from local authorities and officials, and especially the police. His many friends will be pleased to know that in his retirement Mr. Edwards will remain in Exeter. His successor, Mr. J. M. L. Penhale, M.R.C.V.S. who was welcomed by Mr. Lake yesterday, comes from

Lincolnshire, where he has been performing duties similar to those he takes up in Devon. He has many family connections in Devon; his father and brother live at Holsworthy and other relatives in North Devon. We wish him as successful a sojourn in Devon as Mr. Edwards has had."

Successful R.C.V.S. Prosecution.

Daniel S. Davies, 20 Birchfield Road, was summoned at Widnes Police Court, on May 5th, for unlawfully using the description "Veterinary Practitioner." He pleaded not guilty.

Mr. T. Swale (Messrs. Poole, Swale and Co.) appeared to prosecute on behalf of the Royal College of Veterinary Surgeons, and stated that some time ago the defendant was summoned for cruelty to a horse and fined, but that case had nothing to do with the present summons. The Veterinary Surgeons Act of 1881 laid it down that any person not on the register who took the title of veterinary surgeon or veterinary practitioner was liable to a fine not exceeding £20. Mr. Swale then handed to the magistrates a copy of the register, and said that it did not contain the defendant's name. Proceeding, he said that some time ago a Mr. Rose called at the defendant's house for a powder for his horse and the packet bore a label on which was printed "D. S. Davies, veterinary practitioner and canine specialist." Mr. Davies could, of course, continue to carry on this sort of work, but the point he wished to emphasise was that he could not hold himself out as a veterinary practitioner.

The defendant said that he had had these labels for over 30 years, and the matter had never been questioned. He did not pose as a veterinary surgeon, but he had done work for veterinary surgeons to oblige them. He had never told anyone that he was a qualified man.

The Clerk: He acted in ignorance.

Mr. J. Johnson gave evidence on behalf of the defendant and said that Davies had told him that he was not a qualified veterinary surgeon.

The bench imposed a fine of £2.

Common Sense from Mr. Corder.

Mr. R. E. Corder, who so delicately but delectably dishes up the seamy side of London life for the breakfast tables of *Daily Mail* readers, regaled them, *inter alia*, with the following on Monday last:—

"Every time I record a case of cruelty to a horse, a valued woman correspondent from the Midlands accuses me of frivolity. I want to say that I am very fond of dogs, horses, and babies, but I am afraid we are inclined to over-emphasise the importance of the dumb animal. So long as there are babies who need all the sympathy that good-hearted women can give, I refuse to share the enthusiasm of well-meaning women who become hysterical over a case of cruelty to animals.

"In these days of expert inspectors of the R.S.P.C.A. and the watchful attention of constables it is practically impossible for any man to take a horse in pain through the streets of London.

"On Saturday at Clerkenwell we had a horse suffering from a corn. It was taken back to the stable in the ambulance, and the horse-keeper was fined 30s. A horse suffering from a corn is everybody's business; a baby suffering from convulsions is nobody's business. This horse that suffered from a corn and rode in the ambulance was no more hurt than a man or woman who suffers from a corn and has to ride in a taxicab, but what a howl of anguish goes up from super-sensitive men and women concerned over the well-being of dumb animals!"

Notanda.

"La Republique n'a pas besoin de savants." It was with these words that the President of the French Revolutionary Tribunal, in 1793, condemned to death the great French chemist, Lavoisier.

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The history of science is strewn with illustrations of astonishing blindness. Davy, for instance, really established "laughing gas" as an anæsthetic, but two generations followed before the surgeons realised its possibilities.

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Nearly a hundred years ago Dr. Robert Brown, physicist and naturalist, made his striking observation of what is known as "Brownian Movement." His observation was expressed in sober language. He stated that if a liquid contained particles in a state of minute subdivision these could be seen under the microscope to be in a state of violent agitation.

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Recently, and notably through the aid of radium, it has become possible actually to photograph the path of an individual atom, and a clear explanation can now be given of "Brownian Movement."

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Sir Patrick Manson in 1879 announced that the mosquito was the intermediate host in the tropical disease known as Malaria.

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In 1886 Neucki introduced Salol, and Escherich discovered the Colon bacillus. In the same year Sulphonal was prepared by Baumann.

H.K.

The Detection of Anthrax.

At a recent meeting of the Executive Committee of Aberdeen County Council, it was reported that, of three cases of suspected anthrax in animals diagnosed by the local veterinary surgeon since the last meeting, two had been unconfirmed by the Ministry of Agriculture experts. Mr. W. Valentine, Kintore, said it was extraordinary that the local veterinary surgeon found anthrax bacilli in the blood and the Ministry gave a negative report. If animals were insured against anthrax, insurance companies paid on the verdict of the Ministry, and it was a great hardship on farmers when the local veterinary surgeon said an animal died of anthrax and the Ministry denied it. Was it not possible to take two or three slides of blood of each animal, so that one could be retained for examination by an independent person? He moved that in future extra swabs be sent to their own veterinary inspector. Mr. D. F. Lockhart seconded.

The Chairman said that it was a conflict of opinion which would have no result. He moved that no action be taken.

The chairman's amendment found no seconder, and Mr. Valentine's motion became the finding of the meeting.

Local Authorities and the Tuberculosis Order.

Monaghan Urban Council has adopted a resolution calling upon the Government to extend the powers given to local authorities and veterinary inspectors under the Bovine Tuberculosis Order.

A member pointed out that, under the existing law, if the veterinary inspector entered a byre and found a cow that was diseased he had no power to examine that cow or order it to be destroyed; nor was there sufficient provision for compensation where a beast was slaughtered.

It was decided to ask the Govenment to amend the Order, as at present Urban Councils were powerless, and if powers were extended it would do much to stop the spread of tuberculosis in cattle.

"Cases."

"There is no word in medical literature that has been as badly abused as 'case.' Writers continue to 'treat the case,' to 'give the case a dose of medicine,' to refer to the 'death of the case,' etc., *ad infinitum*, when they really mean that all of this happened to the affected subject. The word 'case' is in medical literature to stay, but it should not be employed as a synonym for either the affected subject or the disease at hand. The word covers the broader and yet the well-bounded territory containing the sum total of all that is concerned in the mishap and of which the affected and affection are only a part. 'Case report,' 'case ten,' 'statistics of cases,' 'the foregoing case,' etc., represent correct usage, while 'dosing a case,' 'diagnosing a case,' 'holding an autopsy on a case,' are abuses, for the reason that the word refers to the state of things, the event *in toto*, and not to any particular part thereof."—*North American Veterinarian.*

CORRESPONDENCE.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

Influenza in the Cat.

To the Editor of the Veterinary Record.

Sir,—In reply to Major Kirk, cat owners for years have recognised that cats are subject to colds, catarrhal fever, influenza colds, or influenza in contra-distinction to distemper. It is a common saying that "The cat has got a cold, it will go through the house." The symptoms are sneezing, loss of appetite, rise of temperature and sore throat, followed in two or three days by a discharge from the nose and perhaps the eyes. In about ten days or a fortnight the cat is well again. With distemper the cat is ill for a week or more before there is any sign of discharge from the nose, which discharge is thick and very copious. This discharge lasts for three weeks or more and then there is the convalescent stage, making (if there are no complications) a five or six weeks' illness. Then, again, with distemper in the dog, ferret and lion one attack practically renders the animal immune from another attack and so does true distemper in the cat, but the so-called influenza may recur and a cat often has many attacks during its lifetime, the whole symptoms being those of a human being with a mild attack of influenza. With cases of distemper in the cat, it seems to be contagious and it should be comparatively easy to prevent its spread in a large cattery, but with the so-called influenza it seems to be infectious and it is difficult to prevent it from spreading. The great difference between influenza and distemper is that one attack of the former disease does not render the subject immune from other attacks, which often occur twice or three times a year during the animal's lifetime, especially in the spring and autumn.—Yours faithfully, T. F. Prime.

Upper Norwood.
May 16th, 1927.

The Editor acknowledges the receipt of the following:—Communications from Dr. G. D. Lander (Ashford), Messrs. F. Beckett (Blandford), H. Gray (Kensington), R. L. Higgins (Kensington), R. H. Smythe (Camborne), and W. Tweed (Sheffield).

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